

What is claimed is:

1. An optical network which is formed by a
2 plurality of optical network transmission apparatuses
3 (11 - 15) and a plurality of transmission lines (21 -
4 25) that connect the optical network transmission
5 apparatuses, characterized in that
6 each optical network transmission apparatus
7 comprises
8 advertisement means (121) for autonomously
9 advertising a usable wavelength in a transmission line
10 connected to the apparatus, and
11 collection means (122) for autonomously
12 collecting a usable wavelength in a transmission line
13 that is advertised by another apparatus.

2. A network according to claim 1, wherein said
2 advertisement means comprises notification means for
3 notifying another apparatus adjacent to the apparatus of
4 the usable wavelength in the transmission line connected
5 to the apparatus and the usable wavelength in the
6 transmission line that is collected by said collection
7 means.

3. A network according to claim 1, wherein the
2 optical network transmission apparatus further comprises
3 route calculation means (113) for calculating a route of

4 an optical path on the basis of the usable wavelength in
5 the transmission line connected to the apparatus and the
6 usable wavelength in the transmission line that is
7 collected by said collection means.

4. A network according to claim 1, wherein the
2 optical network transmission apparatus comprises
3 wavelength management means (111) for managing
4 the usable wavelength in the transmission line connected
5 to the apparatus, and
6 wavelength update means (114) for updating the
7 usable wavelength managed by said usable wavelength
8 management means when an optical path is set in the
9 transmission line connected to the apparatus.

5. An optical network transmission apparatus (11)
2 in which the apparatus (11) and other adjacent
3 apparatuses (12, 15) are connected by transmission lines
4 (21, 25), characterized by comprising:
5 advertisement means (121) for autonomously
6 advertising usable wavelengths in the transmission lines
7 connected to the apparatus; and
8 collection means (122) for autonomously
9 collecting usable wavelengths in transmission lines (22,
10 24) that are advertised by said other apparatuses.

6. An apparatus according to claim 5, wherein

2 said advertisement means comprises notification means
3 for notifying said other apparatuses of the usable
4 wavelengths in the transmission lines connected to the
5 apparatus and the usable wavelengths in the transmission
6 lines that are collected by said collection means.

7. An apparatus according to claim 5, further
2 comprising route calculation means (113) for calculating
3 a route of an optical path on the basis of the usable
4 wavelengths in the transmission lines connected to the
5 apparatus and the usable wavelengths in the transmission
6 lines that are collected by said collection means.

8. An apparatus according to claim 1, further
2 comprising:
3 wavelength management means (111) for managing
4 the usable wavelengths in the transmission lines
5 connected to the apparatus; and
6 wavelength update means (114) for updating the
7 usable wavelengths managed by said usable wavelength
8 management means when an optical path is set in the
9 transmission lines connected to the apparatus.

9. A distributed routing control method in an
2 optical network which is formed by a plurality of
3 optical network transmission apparatuses (11 - 15) and a
4 plurality of transmission lines (21 - 25) that connect

5 the optical network transmission apparatuses,
6 characterized by comprising the step (S2) of causing
7 each optical network transmission apparatus to
8 autonomously advertise a usable wavelength in a
9 transmission line connected to the apparatus, and
10 autonomously collect a usable wavelength in a
11 transmission line that is advertised by another
12 apparatus.

10. A method according to claim 9, wherein the
2 advertisement step comprises the step of notifying
3 another apparatus adjacent to the apparatus of the
4 usable wavelength in the transmission line connected to
5 the apparatus and the collected usable wavelength in the
6 transmission line.

11. A method according to claim 9, further
2 comprising the step (S3, S4) of calculating a route of
3 an optical path on the basis of the usable wavelength in
4 the transmission line connected to the apparatus and the
5 collected usable wavelength in the transmission line.

12. A method according to claim 9, further
2 comprising:
3 the step (S5) of setting an optical path along
4 a route obtained by route calculation; and
5 the step (S6) of updating the usable

6 wavelength in the transmission line connected to the
7 apparatus.

13. A machine-readable recording medium which
2 records a program of a distributed routing control
3 method in an optical network which is formed by a
4 plurality of optical network transmission apparatuses
5 (11 - 15) and a plurality of transmission lines (21 -
6 25) that connect the optical network transmission
7 apparatuses, characterized in that the recording medium
8 records a program for executing a process (S2) of
9 autonomously advertising a usable wavelength in a
10 transmission line connected to each apparatus, and
11 autonomously collecting a usable wavelength in a
12 transmission line that is advertised by another
13 apparatus.

14. A medium according to claim 13, wherein the
2 program executes, as the advertisement process, a
3 process of notifying another apparatus adjacent to the
4 apparatus of the usable wavelength in the transmission
5 line connected to the apparatus and the collected usable
6 wavelength in the transmission line.

15. A medium according to claim 13, wherein the
2 program further executes a process (S3, S4) of
3 calculating a route of an optical path on the basis of

4 the usable wavelength in the transmission line connected
5 to the apparatus and the collected usable wavelength in
6 the transmission line.

16. A medium according to claim 13, wherein the
2 program further executes
3 a process (S5) of setting an optical path
4 along a route obtained by route calculation, and
5 a process (S6) of updating the usable
6 wavelength in the transmission line connected to the
7 apparatus.